COLLABORATION AND COMMUNICATION OF GLOBAL RISK ASSESSMENT INFORMATION

Chemical risk assessment struggles to keep

up with with chemical synthesis and use.

Andrea Wullenweber1, Oliver Kroner1, Jacqueline Patterson1, PhilIP Wexler2, Andrew Rak3, and Chuck Tomljanovic4

4Concurrent Technologies Corporation (CTC). Johnstown. PA

ABSTRACT

With limited resources to keep up with a high demand for risk assessment products, it is critical that existing information is readily available and that risk assessors collaborate during the risk assessment process.

Several global risk assessment tools are available to address these issues. First, the Alliance for Risk Assessment (ARA) is a collaboration of organizations dedicated to supporting public health protection by working together on projects to improve the process, efficiency, and quality of risk

assessment. Second, the International Toxicity Estimates for Risk (ITER) is a free Internet database of chronic human health risk assessment data from organizations around the world for 650+ chemicals. ITER is available at www.tera.org/iter and on National Library of Medicine's TOXNET system (http://toxnet.nlm.nih.gov/).

Finally, the Risk Information Exchange (RiskIE) is a free Internet database that contains notifications about a variety of human health risk assessment projects that are underway or recently completed. RiskIE is available

> at http://www.allianceforrisk.org/RiskIE.htm and will join ITER on TOXNET. ITER and RiskIE provide risk assessors essential tools for easily identifying and comparing available human health risk data, for sharing in progress risk assessments, and for enhancing

interaction among risk assessment groups to decrease duplication of effort. ITER and RiskIE were developed by Toxicology Excellence for Risk Assessment (TERA) and are also resources that support the mission of the ARA by tracking up-to-date information on risk assessment activities.

RISKIE RISK INFORMATION EXCHANGE

Created in 2007, Risk Information Exchange (RiskIE) is a free Internet database that contains notifications about in progress or recently completed human health risk assessment projects. RiskIE includes notification of chemical-specific risk value and methods document development as well as training classes and white papers.. By industry, academic, and environmental stakeholders of the risk assessment community allowing users to identify potential areas for collaboration.

Home About ARA Tools Projects Contact Us RiskIE Message Board Search RiskIE: Risk Information Exchange

5,600+ In-progress or recently completed human health risk values being conducted by 30 organizations representing 13 countries across the world

		KIE: Risk Information Exchange					RisklE FAQ Link to ITER			Advisory ComnAmerican Confe	
	Substance/Project	CAS	Project Type	Project Description	Status	Date of Completion	Organization	Contact	Link	Committee of the Commit	nerican Industria
	Contains -	Cont ▼	Contains -	Contains •	Contain •	Contains	Contains •	Contains -	Contains	- IR -	gency for Toxic S
		100-41-4] [difornia Environ
							Search	Cancel			epartment of the
iew	Ethylbenzene	100-41- 4	Risk Document Development	Integrated Risk Information System (IRIS) Cancer and Non- cancer Risk Values	In Progress	2009-03-30	United States Environmental Protection Agency (USEPA)	hotline.iris@epa.gov	http://cfpub.epa.gov/ncea/iristrac/index.cfm	25-Sep-2008 10:51:44 • En	vironment Cana
lew	Benzene, ethyl-	100-41- 4	Risk Document Development	Domestic Substance Lists will undergo a screening assessment for potential risks to human health or the environment.		NA	Health Canada	ead@hc-sc.gc.ca	http://www.hc-sc.gc.ca/ewh-semt/contaminants/existsub/categor/_result_substance/index_e.html	12:03:42 • Fo	ropean Chemica od Standards Ag
iew	ethylbenzene	100-41-	Risk Document Development	Cocupational Exposure Limit (OEL)	In Progress	NA	European Chemicals Bureau (ECB) Online European Risk Assessment Tracking System (ORATS)	sharon.munn@jrc.it	http://ecb.jrc.it/esis/index.php?PGM=ora	• He • Int	awaii Departmen calth Canada cernational Agend
lew	Ethyl benzene	100-41-	Risk Document Development	Threshold Limit Value (TLV)/Biological Exposure Indices (BEI) development	In Progress	NA	American Conference of Industrial Hygienists (ACGIH)	mail@acgih.org	http://www.acgih.org/Resources/press/TLV2008list.htm	16:05:29 Indu	 Institution for Statu Industry (BG Chemic International Progra
/iew	Ethylbenzene	100-41-	Risk Document Development	Toxicological profile (Update) - Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Set 21. The public comment period has ended and the profiles will be revised based on relevant public comments.	In Progress	NA.	Agency for Toxic Substances and Disease Registry (ATSDR)	cdcinfo@cdc.gov	http://www.atsdr.cdc.gov/toxprofiles/tp110.html	• Mi • Mi • Na • Na	ichigan Departm inistry of Health, itional Academy itional Chemical itional Environm
liew	Ethylbenzene	100-41-	Risk Document Development	acute and chronic inhalation toxicity; odor and vegetative effects	In Progress	NA	Texas Commission on Environmental Quality (TCEQ)	rgrant@tceq.state.tx.us	http://www.tceq.state.tx.us/assets/public/implementation/tox/esl/consideration/2006.p	df 01-Oct-2008 10:41:47 • Na	tional Industrial
fiew	Ethyl Benzene	100-41-	Risk Document Development	Toxic Air Contaminants (TAC)	In Progress	NA	California Environmental Protection Agency: Office of Environmental Health Hazard Assessment (OEHHA)	helpline@arb.ca.gov	http://www.arb.ca.gov/toxics/cattable.htm	• Na • Na	ntional Institute fon Itional Resources Itional Toxicolog Indic Expert Grou
liew.	Ethylbenzene	100-41-	Risk Document Development	Proposition 65	In Progress	NA	California Environmental Protection Agency: Office of Environmental Health Hazard Assessment (OEHHA)	coshita@oehha.ca.gov	http://www.oehha.ca.gov/prop65/CRNR_notices/admin_listing/intent_to_list/noil20.htm	• NS • Org • Te:	SF International ganization for Ecxas Commission
liew	Ethylbenzene	100-41-	Risk Document Development	Long-term testing for health effects	In Progress	NA		RKATAISAKU@mhlw.go.jp	p NA	• Un	xicology Excellentical States Environments of States Environments (St. HPV, IRIS,

ORGANIZATIONS INCLUDED • Advisory Committee on Existing Chemicals (BUA) • American Conference of Governmental and Industrial Hygienists American Industrial Hygiene Association Agency for Toxic Substances and Disease Registry • California Environmental Protection Agency • Department of the Environment (UK): Environmental Hazard Assessment • Environment Canada • European Chemicals Bureau • Food Standards Agency (UK) • Hawaii Department of Health Hazard Evaluation Health Canada • International Agency for Research on Cancer • Institution for Statutory Accident Insurance and Prevention in the Chemical Industry (BG Chemie) • International Programme for Chemical Safety • Michigan Department of Environmental Quality: Air Toxics Division • Ministry of Health, Labour, and Welfare (Japan) National Academy of Sciences • National Chemicals Inspectorate (Sweden) • National Environmental Research Institute (Denmark) • National Industrial Chemicals Notification and Assessment Scheme (Australia) • National Institute for Occupational Safety and Health National Resources Canada National Toxicology Program • Nordic Expert Group (Denmark, Finland, Iceland, Sweden, and Norway) • Organization for Economic Co-operation and Development (OECD) • Texas Commission on Environmental Quality • Toxicology Excellence for Risk Assessment • United States Environmental Protection Agency

ITER International Toxicity Estimates for Risk

Created in 1996, the International Toxicity Estimates for Risk (ITER) is a free Internet database of chronic human health risk values and/or cancer classifications for over 650 chemicals from a variety of authoritative groups worldwide. ITER provides a centralized source of peer reviewed risk data, with a description of the methodologies used by different organizations.

ITER PROVIDES:

• Chronic human health risk data in a side by side format • A synopsis that explains the underlying basis and rationale for each risk value and differences in risk values • A link to each organization's website or source document

• A forum through which independent parties can share their peer reviewed risk values • A resource to ensure that risk managers do not "miss" useful data

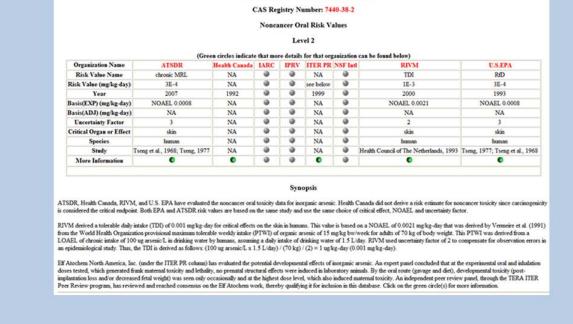
Chemicals on ITER with peer reviewed, chronic human health risk data from organizations around the world

ORGANIZATIONS INCLUDED

- Agency for Toxic Substances & Disease Registry (ATSDR)
- International Agency for Research on Cancer (IARC) (in progress)
- NSF International • National Institute of Public Health & the Environment (RIVM)
- U.S. Environmental Protection Agency (US EPA) • Independent parties whose risk values have undergone peer review.

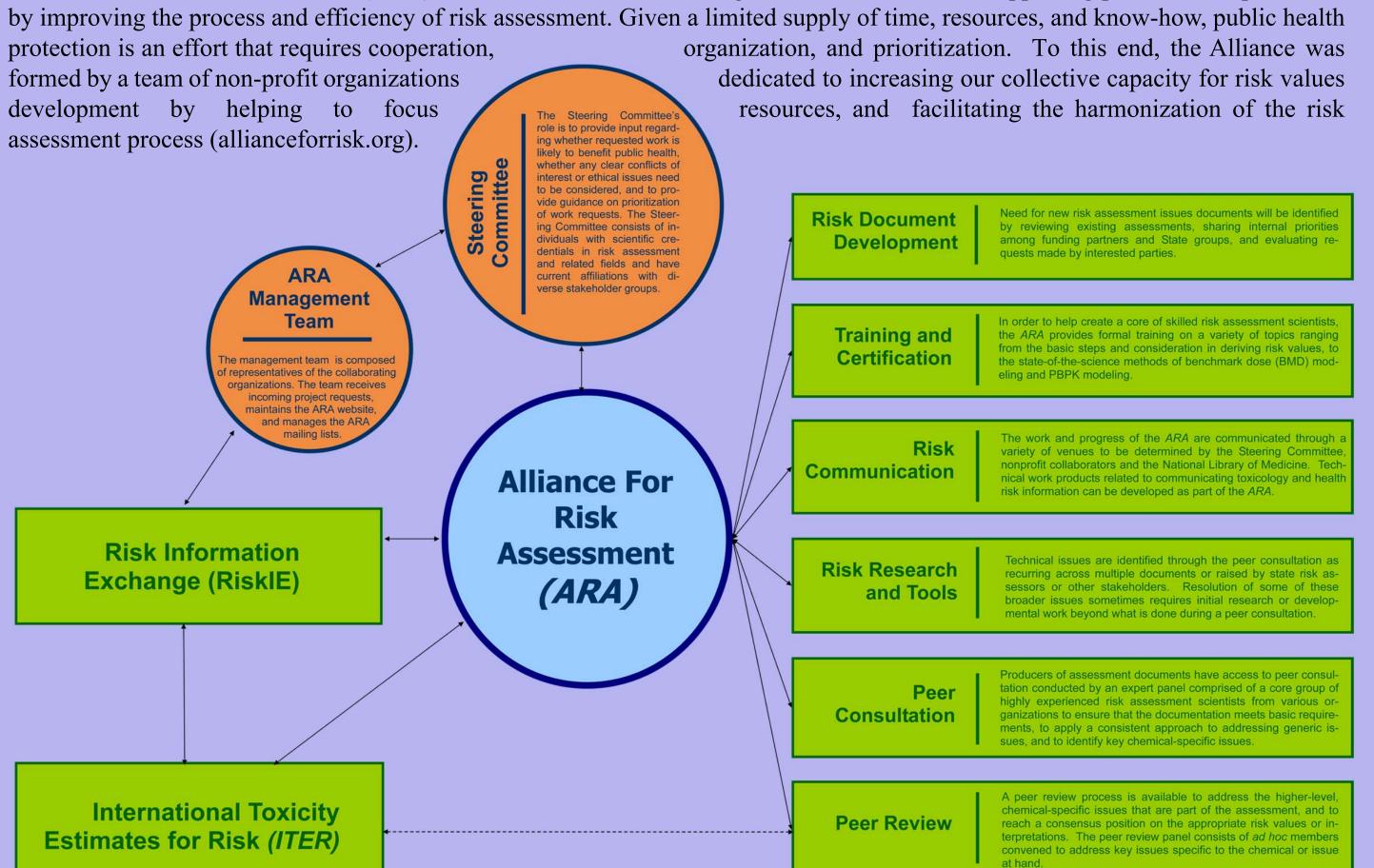
A search for "arsenic" on ITER (TOXNET version) reveals 10 results (above left). Clicking on "ITER" shows primary and secondary results (above left). right). Using the primary record for "arsenic, inorganic," the below example shows the "noncancer oral" data available for this chemical (printed from Original ITER). This example shows the data comparison table, the synopsis, and the further information section for two of the organizations.

Additional information available on ITER includes "noncancer inhalation, cancer oral, and cancer inhalation



	More Information : Level 3							
	Organization Name: ATSDR							
Determination of Critic Effect:	See MRI, Worksheet in Toxicological Profile, Appendix A, pp. A-5 through A-6. Available at http://www.atsdc.cde.gov/hoxprofiles/bp2-a.pdf See MRI, Worksheet in Toxicological Profile, Appendix A, pp. A-5 through A-6. Available at http://www.atsdc.cde.gov/hoxprofiles/bp2-a.pdf See MRI, Worksheet in Toxicological Profile, Appendix A, pp. A-5 through A-6. Available at http://www.atsdc.cde.gov/hoxprofiles/bp2-a.pdf See MRI, Worksheet in Toxicological Profile, Appendix A, pp. A-5 through A-6. Available at http://www.atsdc.cde.gov/hoxprofiles/bp2-a.pdf See MRI, Worksheet in Toxicological Profile, Appendix A, pp. A-5 through A-6. Available at http://www.atsdc.cde.gov/hoxprofiles/bp2-a.pdf See MRI, Worksheet in Toxicological Profile, Appendix A, pp. A-5 through A-6. Available at http://www.atsdc.cde.gov/hoxprofiles/bp2-a.pdf See MRI, Worksheet in Toxicological Profile, Appendix A, pp. A-5 through A-6. Available at http://www.atsdc.cde.gov/hoxprofiles/bp2-a.pdf See MRI, Worksheet in Toxicological Profile, Appendix A, pp. A-5 through A-6							
Quantitative Estimate:								
Peer Review:	The ATSDR Toxicological Profile has undergone internal agency reviews and has been externally reviewed by a peer review panel. Tseng, W.P., H.M. Chu, S.W. How, J.M. Fong, C.S. Lin and S. Yeh. 1968. Prevalence of skin cancer in an endemic area of chronic arsenicism in Taiwan. J. Natl. Cancer. Inst. 40(3): 453-463.							
Bibliography:								
	Tseng, W.P. 1977. Effects and dose-response relationships of cancer and Blackfoot disease with arsenic. Environ. Health Perspect 19:109-119.							
For Further Information	ATSDR (Agency for Toxic Substances and Disease Registry). 2007. Toxicological Profile for Arsenic. U.S. Department of Health and Human Services, Public Health Service. August. Available at http://www.atsch.cole.gov/toxprofiles/to2.html For the list of ATSDR minimal risk levels (MRLs), see http://www.atsch.cole.gov/toxprofiles/to2.html							
	More Information : Level 3							
	Organization Name:Health Canada							
Determination of Critical Effect:								
Quantitative Estimate:								
Enter by Dr	The Health Crancia supporting documentation and assessment were approved by an interferenceate committee of the Health Protection Branch of Health Chanda and were externally reviewed by Drs. A Li-Maller and R. R. Weller of the Ontario Ministry of Environment and Energy, Drs. H. J. Gibb and C. Chen of the U. S. Environmental Protection Agency, Drs. P. Enterline and G. Marsh of the University of Pittsburgh and staff of the Information Department of BIBRA Toxicology International. The supporting documentation was externally reviewed by Dr. I. Harding-Barlow, Consultanz, Dr. S. Barther of the Biostatistics and Computer Applications Division of the Environmental benalth Directoriste, Health Canada assisted in the development of the quantifiative estimates of carcinogenic potency. Background documentation for the assessment was prepared by BIBRA Toxicology International Conference and Canada assisted in the development of the quantifiative estimates of carcinogenic potency. Background documentation for the assessment was prepared by BIBRA Toxicology International Conference and Canada assisted in the development of the quantifiative estimates of carcinogenic potency. Background documentation for the assessment was prepared by BIBRA Toxicology International Conference and Canada assisted in the development of the quantifiative estimates of carcinogenic potency. Background documentation for the assessment was prepared by BIBRA Toxicology International Canada assisted in the development of the canada assisted in the development of the quantifiative estimates of carcinogenic potency. Background documentation for the assessment was prepared by BIBRA Toxicology International Canada assisted in the development of the quantifiative estimates of carcinogenic potency. Background documentation for the assessment was prepared by BIBRA Toxicology International Canada assisted in the development of the quantifiative estimates of carcinogenic potency. Background documentation are assisted in the development of the participation of							
	dentified prior to 1992 were considered for inclusion in the Health Canada assessment.							
Bibliography:								
	Hughes, K., M.E. Meek and R. Burnett. 1994. Inorganic Arsenic: Evaluation of Risks to Health from Environmental Exposure in Canada. In: Environmental Carcinogenesis and Ecotonicology Reviews, Part C of Journal of Environmental Science and Health. C12(2): 145-159.							
	nument Canada, Health Canada. 1993. Priority substances list assessment report: arsenic and its compounds. Ottawa. Ministry of Public Works and Government Services.							

ARA ALLIANCE FOR RISK ASSESSMENT



The Alliance for Risk Assessment (ARA) is a collaborative effort of organizations dedicated to supporting public health protection

GUIDING PRINCIPLES

- Promote science-based decision making to protect human health
- Enhance harmonization and consistency in risk assessments through an open, transparent, multi-stakeholder approach
- Maintain access to groups of risk assessment experts that are normally not available within a single organization, agency or
- Share costs, information, and human resources among multiple stakeholders to increase the capacity and quality of risk values

BENEFITS OF THE ALLIANCE MODEL

CREDIBILITY

assessment community

Projects are evaluated by the ARA Steering Committee, composed of a broad range of experts from various backgrounds and perspectives. The involvement of diverse interests:

enhances credibility • ensures careful consideration of all key data and ideas • provides thoughtful management of potential biases

• indicates the importance of a project to the broader risk

• Technical resources- ARA provides access to experienced scientists and experts not typically found within a

single organization. • Financial Resources- For organizations with limited funding, ARA offers help covering the costs of a project

SHARING OF RESOURCES

The collaborative nature of the ARA centers on the

pooling of resources. ARA participants benefit from

and will assist in identifying potential co-sponsors. • Information- ARA participants keep each other informed of their activity, creating opportunities for

EXPOSURE

The ARA encourages the free-flow of information across organizations. Projects that utilize the ARA process will be broadcast within the Risk assessment community via:

• RiskIE- The Risk Information Exchange is a free internet database that tracks in-progress risk and toxicity assessments • ITER- The International Toxicity Estimates of Risk database lists chronic human health risk values • ARA Newsletter/Website- ARA maintains an up-to-date website with descriptions of ongoing projects. Newsletter updates are sent regularly to the risk assessment community

CONCLUSION

With a growing pool of unevaluated chemicals and limited resources, responsible public health protection requires the risk assessment community shares existing risk assessment information and collaborates during the risk assessment process to reduce duplicate efforts. The ITER database (www.tera.org/iter) provides risk assessors easy access to peer reviewed chronic human health risk assessment data from a variety of organizations worldwide. The RiskIE database (www.allianceforrisk.org/RiskIE.htm) offers a window into the activities of participating organizations, providing notifications of in-progress human health risk assessment work to promote networking and collaboration. Using these databases, the Alliance for Risk Assessment (www.allianceforrisk.org) actively works to connect groups working on similar issues, and provides a forum through which organizations can combine and efficiently focus resources.

Overall, these three resources provide risk assessors essential tools for readily locating and comparing available risk data, for sharing progress of work, and for identifying and implementing opportunities for collaboration among organizations. The overall effect is to focus resources, reduce duplication of effort, and improve efficiency in human health risk assessment.